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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/514,250	02/28/2000	Ho Young Choi	YHK-039	9403

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FLESHNER & KIM, LLP
P.O. BOX 221200
CHANTILLY, VA 20153

EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/514,250	CHOI ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-25 and 61-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-25 and 61-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION***Remark***

- This Office Action is in response to applicant's amendment filed on April 29, 2003, which has been entered as paper number 26.
- By this amendment, the applicant has amended claim 20 and has canceled claims 1-18, 26-40 and 44-60 and has newly added claims 61-82.
- Claims 19-25 and 61-82 remain pending in this application.
- The rejections to claims 47, 51 and 53 under 35 USC 112, second paragraph, set forth in the previous Office Action are **withdrawn** in response to applicant's amendment.

Response to Amendment

1. The amendment filed April 29, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the **newly added claims 63, 69 and 75** recite the feature "the third lens forces the chromatic aberrations to decrease thus enhancing the chromatic aberration correction". The specification only gives the support for the *diffractive* optical element to forces the chromatic aberrations to decrease but not the third lens by itself.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 63, 69 and 75 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The reasons for rejection based on the newly added matters are set forth in the paragraph above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 19-25, newly added claims 61-63, 65-69, 71-75 and 77-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Moskovich (PN. 4,776,681) in view of the patent issued to Ogata et al (PN. 5, 982,544).**

Moskovich teaches a projection lens having a *first lens* with positive refractive power in the center and negative refractive power on the peripheral, a *second lens* of positive refractive power, and a *third lens* of positive refractive power lens and a *fourth lens* of negative refractive power, (please see Figure 3). **Moskovich** teaches that the surfaces of the first lens, third lens and the fourth lens may include *aspherical surfaces*, (please see Table X). This means, (with respect to amended claim 20), that the first, third and fourth lenses are each designated to have an aspherical surface, (please see Table X).

This reference has met all the limitations of the claims with exception that it does not teach to include a diffractive optical element. **Ogata** in the same filed of endeavor teaches to include a diffractive optical element that particularly can be formed on an aspherical lens to correct the **aberrations**, including

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chromatic aberrations, of the lens system. Ogata teaches that the diffractive/aspherical lens may be made of plastic. It would then have been obvious to one skilled in the art to apply the teachings of Ogata to form a diffractive optical element on an aspherical lens of the lens system of Moskovich for the benefit of correcting the aberrations in the projection lens system.

With regard to claims 61, 67 and 78, Moskovich teaches that the aspherical lens surfaces are designed by the aspherical lens formula as stated in column 5 and line 30-35 with "K" stands for conic constant, "C" stands for curvature of the lens and aspherical coefficients for the polynomial of different power of height "r" measured from the optical axis.

With regard to claims 62, 68 and 74, these references do not teach *explicitly* that the fourth lens and the diffractive optical element have chromatic dispersion characteristics opposite to each other. However the idea of using diffractive optical element to correct chromatic aberration is to have the chromatic dispersions created by the diffractive element and the lens element, intended to be corrected, being opposite to each other. Such feature is therefore either inherently met by the disclosure of Ogata or an obvious modification to one skilled in the art to make the diffractive element particularly correcting the chromatic aberrations of the fourth lens for the benefit of improving the image quality of the CRT.

With regard to claims 63, 69 and 75, Moskovich teaches that third lens which is a corrector lens for correcting the aberrations of the lens system. Although this reference does not teach explicitly that the correction includes chromatic aberration, Ogata in the same field of endeavor teaches that diffractive optical element may be added to lens surface to correct chromatic aberration of the lens system. It would then have been obvious to one skilled in the art to apply the teachings of Ogata to add diffractive optical element to the corrector lens for the benefit of providing chromatic aberration correction to the lens system to improve the image quality of the CRT.

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With regard to claims 65, 71 and 79, the projection lens system of Moskovich teaches the same lens structure combination, which therefore also does not require additional lenses having negative refractive power to enlarge the dispersion of a beam.

With regard to claims 66, 72, and 80, Moskovich teaches that the second lens has the majority of the refractive power, (please see column 18, lines 12-14). The correction of aberrations therefore is mainly directed to the aberration created by the second lens.

With regard to claims 73 and 81, Moskovich teaches that the first, third and fourth lenses are each designed to have an aspherical surface, which implicitly have the function of correcting spherical aberrations. It is either implicitly true or an obvious modification to one skilled in the art to make these lenses work in conjunction to reduce the aberrations for the benefit of improving the property of the lens system and the image quality.

With regard to claims 77 and 82, Moskovich teaches the projection lens has overall positive power. The projection lens of Moskovich in combination with the teachings of Ogata has the function of correcting the chromatic aberrations.

6. Claims 64, 70 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Moskovich and Ogata as applied to claims 19, 67 and 74 above, and further in view of the patent issued to Maruyama et al (PN. 5,838,496).

The projection lens system of Moskovich in combination of the teachings of Ogata as described for claims 19, 67 and 74 have met all the limitations of the claims. Ogata teaches explicitly that diffractive optical element is added to lens surface to correct chromatic aberrations of the lens system. Although these references do not teach explicitly about the claimed color dispersion properties of the lens and the diffractive optical element, these dispersion properties are standard properties for diffractive optical element and refractive optical element, as demonstrated by the teachings of Maruyama et al.

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Maruyama et al teaches that due to chromatic aberration, the refractive lens function causes the light of shorter wavelength (such as blue light as compared to red light) moves toward the lens (i.e. closer to the lens or shorter focal length). The diffractive lens function on the other hand causes the light of shorter wavelength (such as blue light as compared to red light) moves away (i.e. further from the lens or longer focal length). The combination of the refractive lens function and diffractive lens function with opposite chromatic dispersion properties will reduce or cancel the chromatic aberrations caused by the lenses, (please see column 3 line 55 to column 4, line 9).

Double Patenting

7. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

8. Applicant is advised that should claims 61 and 62 be found allowable, claims 67 and 74 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

9. Applicant's arguments filed on April 29, 2003 have been fully considered but they are not persuasive. The newly added claims have been fully considered and they are rejected for the reasons stated above.

10. In response to applicant's argument in the Remark, which states that "As discussed in the personal interview, the claimed four lens system is novel and non-obvious because the combination of the specific lenses and diffractive optical element, as claimed, provide novelty" the **examiner** respectfully **disagrees** and wishes to make the record clear. In the personal interview with applicant's attorney Ms. Lee, **the examiner specifically stated that the four-lens system is explicitly taught by the cited Moskovich reference and the idea of adding a diffractive optical element to a lens surface is standard and well known in the art to correct the aberrations of the lens system.** No novelty therefore is presented in claims 19-25.

11. In response to applicant's argument which states that the cited Moskovich reference fails to suggest the four-lens system the examiner respectfully disagrees for the reasons stated below. Moskovich teaches a projection system having a first lens (G1) having positive optical power at the optical axis and negative optical power at the peripheral, (column 6, lines 6-11), a second lens (G2) of majority positive optical power, third corrector lens (CR) which may have positive optical power (Figure 3) and a fourth lens (G3) of negative optical power, which **exactly** reads on the claimed four lens system. Moskovich teaches explicitly that the second lens have a biconvex form which supplies the majority of the positive optical power, (please see column 18, lines 13-14).

12. In response to applicant's argument, which states that the idea of the use of diffractive optical element in the claimed invention is not the invention as whole, the examiner respectfully pointed that

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however the “*intention*” may be the intention of the applicant, only the “idea of the use of diffractive optical element in the claimed invention” is claimed in the claims.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

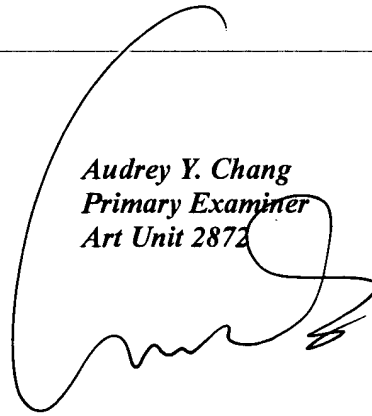
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.
July 2, 2003

A large, stylized handwritten signature in black ink, likely belonging to Audrey Y. Chang, is written over the printed name and title.